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Terry W. Kramer*
Arlir M. Amado*
Andreas Baltatzis
Hans J. Crosby*

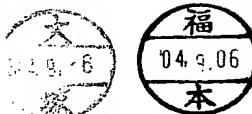
Of Counsel
Tyler S. Brown

tered Patent Agents
ias A. Powers, Ph.D.
Matthew J. Gerike

hnology Specialists
C. Michael Obinna
Raj C. Patel
ijan N. Karimi, M.S.
Srijesh S. Patel, M.S.
Paul I. Obiniyi
A. Todd Buttram
Sung P. Ham, M.S.
Samir P. Patel
Shrestha, M.S., M.I.P.
Mita Biswas, Ph.D.
David Groesbeck
John S. Troy
Kyle G. Hepner
Nirav B. Sheth

Member Bar other Virginia

September 1, 2004



Mr. Noboru Otsuka

HITACHI LTD, INTELLECTUAL PROPERTY GROUP
IP Development & Management Division, Patent Dept 4
292, Yoshida-cho, Totsuka-ku, Yokohama-shi
Kanagawa 244-0817 Japan

RE: Petition-To-Make-Special Search
For: **PATH CONTROL METHOD**
Your Ref. No.: 340301800US01
Our Ref. No.: HIT 1120

Dear Mr. Otsuka:

We have completed the petition-to-make-special search at the U.S. Patent and Trademark Office regarding the above-identified invention. The field of search covered Class 711, subclasses 112 (U.S. & Foreign), 113 (U.S. & Foreign), 114 (U.S. & Foreign) and 147 (U.S. & Foreign) and Class 714, subclass 4 (U.S. & Foreign). Additionally, a computer database search was conducted on the USPTO systems EAST and WEST and a literature search was also conducted on the Internet for relevant non-patent documents and a search for foreign patent documents on the Espacenet and Delphion databases. Examiner Denise Tran in Class 711 (Art Unit 2186) was consulted in confirming the field of search.

The search was directed towards path control method. In particular, the search was directed towards claims 1-20 of U.S. Patent Application Number 10/801720. The claims describe a system comprising a first device, a second device, a plurality of paths which connects a first device and a second device and a third device detecting congestion of plurality of paths and notifies a first device of congestion, and a first device changing the predetermined ratio among the paths, on the basis of notification to transfer the data to a second device using plurality of paths; having a first device transferring data to a second device, using a plurality of paths at a predetermined ratio with the first device detecting congestion of plurality of paths; having a storage device comprising a control unit, a disk device which connects the control unit; and interface which is connected to a network with the interface connected to other devices by plurality of paths in the network, having a control unit sending data stored in the disk device as a packet to other device using plurality of paths at a predetermined ratio among path, and if acknowledgement for the packet sent to other device has not been received for fixed period a control unit

Crystal Plaza One
Jefferson Davis Hwy
Suite 1101
Arlington, Virginia
22202
tel: 703.413.5000
fax: 703.413.5048

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changing the predetermined ratio among paths according to the occurrence of congestion; having a computer which is connected to a first storage device with a switch included in the plurality of paths, with first computer detecting congestion of a first path among plurality of paths on the basis of a notification from a switch and notifies the first storage device of the predetermined ratio after change; and all the other elements as further claimed in the disclosure.

Please note the enclosed documents listed in numerical order for convenience:

U.S. Patent Number

5,726,977
6,408,358
6,625,691
6,757,291
6,757,753

Inventor(s)

Lee
Uchiyama et al.
Obara et al.
Hu
DeKoning et al.

Published Patent Application

2003/0182516
2004/0024870
2004/0034751
2004/0102925
2004/0123028
2004/0128453
2004/0158656

Inventor(s)

Fujimoto
Hirata et al.
Horn et al.
Giffords
Kanai et al.
Ido et al.
Fujibayashi et al.

Foreign Patent Number

JP 56129456

Inventor(s)

Ogura et al.

Brief Description Of The Documents:

U. S. Patent Number 5,726,977 (Lee) shows an apparatus and method for determining a network node congestion state in order to control the congestion, having switching and path establishment device and congestion state discrimination device, (Fig 1). It further shows a device that apply path information to control switching path establishment and also capable of determining the congestion state. See col 4, ln 20-22 & 33.

U.S. Patent Number 6,625,691 (Obara et al.) shows a storage subsystem including plurality of disk controllers, path controller and disk interface. It further shows path switching processor with load balancing. See col 3, ln 29+.



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U.S. Patent Application Publication Number 2003/0182516 (Fujimoto) shows a storage system comprising, an interface unit, first, second and third connection units, a switch for connecting the channel interface, and channel interface units executing data transfer between the interfaces. See Col 15.

U.S. Patent Application Publication Number 2004/0034751 (Horn et al.) shows a load balancing for storage volumes, having a network storage system controller, a processor, first, second, third and fourth path, first, second and third storage devices.

U.S. Patent Number 2004/0123028 (Kanai et al.) shows a storage control apparatus, transmitting acquired data through dedicated data transfer path to other channel control unit and receiving from the other channel control unit an acknowledgement notifying the writing of the transmitted data. See col 4.

U.S. Patent Number 2004/0128453 (Ido et al.) shows a storage system. It further shows a system comprising a first storage, a second storage; plurality of control unit, plurality of connections and a first, second and third path through which data is transferred between the connection and the devices.

Foreign Patent Number JP 56129456 (Ogura et al.) shows a path control method. It further shows a relay station making packet exchange in a network having a plurality of paths to one terminal station, detecting the production of a failure by receiving no response to transmission information and changing the path table (abstract).

U.S. Patent Number 6,408,358 (Uchiyama et al.) shows a storage control unit, means of providing plurality of access paths between a control unit and storage unit. 6,757,291 (Hu) shows a device having a control unit, a management unit, a switching unit, an interface, a storage and load balancing function between a network and storage. 2004/0024870 (Hirata et al.) shows a storage network system, having path switching function, bottleneck analyzing function, path switching judging function, storage apparatus, and management agent.

While the above-noted Examiner was consulted and confirmed our opinion that the most relevant areas for this invention were reviewed, further searching may uncover additional patents. NOTE: The field of search included the most pertinent areas identified by the Examiner and our office as containing relevant patents..



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Enclosed are copies of the cited documents and our invoice for services rendered and disbursements for this matter.

As always, if you have any questions regarding this search, please do not hesitate to call us at (703) 413-5000.

Very truly yours,



Terry W. Kramer
Direct Dial (703) 413-3674
E-mail: terry@kramerip.com

TWK/nsa
Enclosure

